

Application For The Erie County Executive Energy Achievement Award

Name of the Project: Energy Conservation Through Technological and Behavioral Change

Name of organization: Ecology & Environment, Inc.

Address: Ecology & Environment
368 Pleasant View Drive
Lancaster, New York 14086

Contact Name: Mr. Kevin Neumaier, Vice President

Contact Person Telephone Number: 716/684-8060

Dates of project Inception and Completion: January 2001 to Present (Ongoing)

Describe the condition that first caused the project to be considered:

Ecology & Environment, Inc. (E & E) has always been cognizant of the rising energy costs associated with operations, and the detrimental effects that energy generation and consumption have on the environment. To address these concerns, E & E commenced programs in two primary areas: electricity consumption at headquarters operations and vehicle fuel consumption by employee's company-wide. E&E has had some form of a carpooling program in place since 1973; however, the electricity conservation program began in earnest in 2001. While efforts to reduce electricity consumption involved some building system control improvements, E & E recognized that the most critical component was behavioral change by building users. In terms of reducing vehicle fuel consumption by employees, again, behavioral change was the critical factor. These projects originated from an economic need to lower costs and a recognition that over-consumption was having detrimental effects on the environment.

Responses to required questions:

- **What was the initial goal of the project?**

The initial goal of the project was to identify methods by which to reduce electricity consumption by 10 - 15%, as compared to electricity consumption for the previous two years. In terms of fuel conservation by employees, the modest goal (at least at headquarters) was to avoid having to expand the parking facilities to accommodate more vehicles.

- **Was renewable energy technology considered for the project and how?**

E&E had negotiated the purchase of wind energy for a 15-year period equal to approximately 100% of forecasted usage. Unfortunately, the wind project to date has not been built.

E&E has purchased a hybrid vehicle for employee and visitor use.

- **What steps were taken to achieve the goal?**

While E & E's carpooling program has been evolving over the past 20 years, E&E chose to undertake an energy conservation effort in their 64,000 square feet corporate headquarters in the early part of 2001. The first step in undertaking this effort was the formation of a "Green Team" whose mission was, among other things, to identify means to reduce electricity consumption. The project team met regularly to define goals, the methods to achieve goals, and other relevant issues.

E & E began its energy reduction efforts by first developing an electricity consumption baseline. This consisted of analyzing the previous 3 years of electrical utility consumption, then conducting a process to normalize the energy consumption data to account for varying weather conditions between the baseline years. This critical step formed the baseline against which E & E could measure savings.

The next step included conducting a building survey to identify what efforts could be undertaken to accomplish energy conservation. These energy conservation measures (ECMs) included changes in equipment, operations and control, and an evaluation of lighting. Through this thorough survey, E & E also determined ways in which electricity is used in the building. This end-use data was used to generate a building energy consumption profile. E & E also analyzed the building automation system (BAS) operation with respect to the building use schedule and temperature set points. E & E then performed extensive engineering analyses of this data, along with building energy use profile data, and determined what savings could be realized and at what cost. This list was then prioritized based on projects that would provide the greatest return on investment (ROI) within a 5-year time frame.

At the same time this internal audit was being conducted, the Green Team made presentations to all management, employees and facilities personnel. The purpose of the initial meetings was not only to present the objectives of the electricity and vehicle fuel conservation programs, but also to seek input, feedback and buy-in from all building users regarding behavioral issues. These behavioral/outreach initiatives were prioritized, and implementation cost estimates were prepared for the initiatives that promised the best ROI.

A comprehensive list of technology and outreach/behavioral initiatives was then presented to the company's upper management, who then determined priorities, established budgets, and developed an implementation timeline. Implementation of the program began in the fourth quarter of 2001, and has been underway ever since. Besides installation of technologically improved lighting, controls, and energy efficient equipment that has become available since the building was first constructed in 1987, E &

E's energy conservation program involves a very strong behavioral/awareness/outreach effort.

In terms of vehicle fuel conservation, a carpooling program was initially developed and implemented in 1973. The carpooling incentive program has evolved over the years to include the 30+ domestic offices, and has culminated in a sophisticated web-based program (*GreenRide*) that E& E is now marketing to clients. *GreenRide* is a carpool-matching program that allows individuals to find potential carpool partners based on geography, preferences and schedules, and to track who is participating, the number of miles avoided, reduction in CO₂ generation, and whatever else one may want to track for sustainability reporting purposes.

The continual awareness effort, underway since program inception, includes continual employee participation, internal communications regarding progress made, stakeholder communications and community outreach. For the very first time ever, E&E published a corporate sustainability report in 2005 (see attachment).

- **What were the obstacles to completion of the project?**

One of the greatest obstacles was getting “buy in” from employees and management, and in changing ingrained consumptive behavior. Although system controls could be placed on some equipment and lighting, energy conservation requires a psychological shift in behavior. Behavior modification can only be accomplished through active participation, communications and outreach at every level. It has taken time, but everyone at E & E is now committed to doing their part to reduce energy consumption, as evidenced by the results.

- **What support did the project receive?**

The project was endorsed at the very top of the organization, as it was recognized that this was not only good for the environment, but also good for the bottom-line. The most unique component of this effort is that it involved a “grass-roots” effort. Employees within the organization put together and implemented the program – it did not involve any outside consultants or facilitators. This was a collaborative effort by all employees, management and facilities personnel.

- **What was the projected payback period for the project?**

The project team was aiming for a 10 - 15% savings in electrical consumption. Since the project was primarily behavior-related and involved very little technology updates, very little capital costs were involved (<\$5,000). This being the case, a 10% reduction would have resulted in payback period of less than 1 year.

In terms of the *GreenRide* program, the software development work was done in-house, and has evolved over many years, so it's impossible to determine true costs. Additionally, there isn't a direct payback to the company, other than reducing the need for parking.

- **Is the payback on target?**

Yes, payback from E&E's efforts have out-performed expectations.

- **What are the results of the project?**

Since program inception, E & E's conservation efforts have accomplished the following results:

Electricity Conservation

- E&E used almost 40% more electricity in 1999 compared to 2004;
- \$110,000 savings in electrical utility costs;
- Reduction in CO2 emissions (approximately 575 tons);
- Increase awareness towards other sustainability issues in the company;
- Increased awareness towards energy conservation at home;
- Positive public relations value to E & E;
- Awareness of E & E clients and the community towards energy conservation;
- New business opportunities for E&E; and
- Energy Star ratings of 86 and 87 in 2003 and 2004 respectively.

Employee Fuel Conservation (GreenRide company-wide)

- No need for expansion of parking facilities;
- Approximately 31 million avoided vehicle miles traveled;
- Approximately 13,000 tons of avoided CO2 generation;
- Untold savings by employees for fuel and maintenance costs; and
- Resulted in GreenRide, a product that E & E is now marketing.

- **What would you do differently on the next energy project?**

This effort has taught E & E that the more outreach and input that can be garnered from the employees, management and facilities personnel, the more successful the project is likely to be. Future energy projects, internally or externally, will seek as much input as possible from as many people as possible.

- **What do you or your organization consider the most positive secondary outcome from the project?**

The insights gained from undertaking this unique approach internally have resulted in E&E offering this same approach as a service to clients. E&E is now working with several clients using the same unique process.

- **Are you currently purchasing any "green" energy?**

As stated above, E&E had negotiated the purchase of wind energy for a 15-year period equal to approximately 100% of forecasted usage. Unfortunately, the wind project to date has not been built.

- **How will you or your organization be willing to mentor others in starting an energy conservation project?**

E&E hosts annual events in the building wherein the community at large is invited to see the progress that has been made toward reaching our overall sustainability goals, learn how the progress was accomplished, and to ask questions. Additionally, clients and other visitors to corporate headquarters are educated as to the sustainability efforts that E&E is undertaking, which include recycling, green purchasing and other “green” initiatives. As noted above, E&E is currently working with several clients on energy conservation and carpooling projects, and is actively pursuing other innovative approaches for companies to become more sustainable. E&E considers it their duty to help other entities to decrease their energy costs, which in turn helps preserve jobs in our community, helps to preserve natural resources, reduces their negative impacts on the environment, and helps to reduce our nation’s dependency on foreign oil and fossil fuels.

- **May we post/publish your project on our web site?**

Please feel free to post and/or publish this project on your web site.